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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/319,678	08/16/1999	ALBERT ESCHENMOSER	514485-3729	3438

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EXAMINER

FRIEND, TOMAS H F

ART UNIT

PAPER NUMBER

1639

DATE MAILED: 12/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary*file copy*

Application No.

09/319,678

Applicant(s)

ESCHENMOSER ET AL.

Examiner

Tomas Friend

Art Unit

1639

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 September 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 29-62 is/are pending in the application.
- 4a) Of the above claim(s) 30,32-42,44,45,53-59 and 62 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 29,31,43,46-52,60 and 61 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

Art Unit: 1639

Detailed Action

Change of Art Unit Designation

Please note: The Art Unit location of this application in the PTO has changed from Art Unit 1627 to Art Unit 1639. To aid in matching papers to this application, all further correspondence regarding this application should be directed to **Group Art Unit 1639**.

Status of the Application

Page 2

Receipt is acknowledged of a response to an office action with amendment on 16 September 2002 (Paper No. 23).

Status of the Claims

Claims 1-28 were pending in the application. Applicants cancelled claims 1-28 and added new claims 29-62 in Paper no. 23. The scope of the new independent claim is different from that of the originally claimed invention. Applicants did not indicate which of newly added claims read on the elected species as required in the restriction/election requirement mailed 28 March 2001 (Paper No. 13). Applicants elected the (corrected) structure in figure 3 of the specification as species of supramolecular nanosystem in Paper No. 20. Applicants have not indicated which claims read on the elected species. The structure in figure 3 is a supramolecular nanosystem in which the pentopyranose monomers comprise pyrido[3,2-h]quinazolin-2(1)-one as a chelating agent functional group directly coupled to the pentopyranose. The pentopyranose monomers are in both the D and the L configurations. No nucleobases are present. Accordingly, present claims 30, 32-42, 44, 45, 53-59, and 62 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species of invention, there being no allowable generic or linking claim. Applicants timely traversed the restriction (election) requirement in Paper No. 16.

Claims 29, 31, 43, 46-52, 60, and 61 are pending and examined in their merits.

Art Unit: 1639

Withdrawn Rejections/Objections

1. The objection to claim 14 over a grammatical error is withdrawn in response to applicants' cancellation of the claim.
2. The rejection of claim 21 under 35 U.S.C. 112, first paragraph (new matter), is withdrawn in response to applicants' amendment.
3. The rejection of claims 1, 3-9, 11, 12, and 14-21 under 35 U.S.C. 112, second paragraph, are withdrawn in response to applicants' amendment.

Maintained Rejections

The statutory basis for each of the following rejections may be found in a prior office action.

Maintained Rejections – 35 U.S.C. 112, first paragraph

4. Claims 29, 31, 43, 46-52, 60, and 61 are rejected under 35 U.S.C. 112, first paragraph, (written description) for reasons made of record in Paper No. 22. This rejection was applied to claims 1-21 in the prior office action.

Applicants argue that [1] new claim 29 is limited to first and second sequences comprising pentopyranose monomers with the functional unit defined by a Markush group; [2] the specification supports the language of the new claims; and [3] the examiners concerns raised in the prior office action have been addressed.

Applicants' arguments have been carefully considered but they are not persuasive.

Applicants claim a generic supramolecular nanosystem which is broader in scope than the that originally claimed. The presently claimed structures are no longer limited to non-helical oligomers, for example. The presently claims structures encompass, for example, any DNA sequences that can hybridize to one another. It is well known that DNA oligomers bind magnesium ions, for example. The scope of the presently claimed invention, in addition to all

Art Unit: 1639

duplex and triplex DNA molecules, also encompasses any noncovalently paired oligomers comprising pentopyranose monomers other than ribose (found in RNA) and deoxyribose (found in DNA). The oligomers encompassed by claim 29, for example, may comprise any structures whatsoever in addition to the pentopyranose moieties. The specification does not disclose representative examples (actual supramolecular nanosystems) of the claimed composition that would indicate to one skilled in the art, that applicants, at the time of filing, were in possession of the full scope of the claimed invention. The specification may be interpreted by one skilled in the art that applicants were in possession of a supramolecular nanosystem in which the oligomers A and B are both the same pyranosyl-nucleic acid and the "*functional unit*" is a gold cluster. The specification does not provide examples of or identify any other actual supramolecular nanosystems possessed by applicants at the time of filing.

The listing of compounds or drawing of structures that have not been synthesized does not, in this case, constitute representative examples indicating that applicants were in possession of the full scope of the claimed invention, which defines the claimed nanosystems in part by the functional ability of oligomers to pair non-covalently. Applicants have not provided evidence that, at the time of filing, they were in possession of representative examples commensurate in scope with the claimed invention.

New Grounds of Rejection

The statutory basis for each of the following rejections not found below may be found in a prior office action.

New Grounds of Rejection – 35 U.S.C. 112, first paragraph

5. Claims 29, 31, 43, 46-52, 60, and 61 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to

Art Unit: 1639

reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention (New Matter).

The scope of newly added claim 29 is broader than the scope of the originally claimed invention. New claim 29 encompasses a nanosystem with helical oligomers. There is no support in the specification for the increased scope of the claimed invention.

New Grounds of Rejection – 35 U.S.C. 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

6. Claims 29, 31, 43, 47-52, 60, and 61 rejected under 35 U.S.C. 102(a) as being anticipated by Mirkin et al. Nature 382:607-609 (August 1996).

The Mirkin et al. reference discloses oligonucleotides (comprising deoxyribose monomers) that form duplexes through sequences that are partially complementary (Page 607, column 2). The 5' or 3' ends of the oligonucleotides are linked to sulfhydryl groups (by attachment to deoxyribose at either the 5' or 3' hydroxyl groups). The sulfhydryl groups are attached to gold atoms and the oligonucleotides are 8 bases or 12 bases in length. Accordingly, the Mirkin et al. reference anticipates present claims 29, 31, 43, 47-52, 60, and 61.

7. Claims 29, 31, 43, 46-51, 60, and 61 are rejected under 35 U.S.C. 102(a) as being anticipated by Alivisatos et al. Nature 382:609-611 (August 1996).

The Alivisatos et al. reference discloses oligonucleotide dimers comprising 18 and 37 base oligonucleotides and the 18-mer oligonucleotides are functionalized at their 3' or 5' ends with thiol groups that bind to gold atoms or inorganic nanocrystals other than gold (Figure 1 and last paragraph on page 611). Accordingly, the Alivisatos et al. reference anticipates present claims 29, 31, 43, 46-51, 60, and 61.

Art Unit: 1639

Conclusion

8. No claims are allowed.

9. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

11. This application contains claims 30, 32-42, 44, 45, 53-59, and 62 drawn to an invention nonelected with traverse in Paper No. 20. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

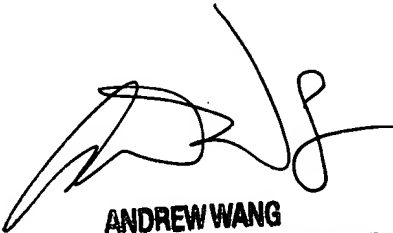
12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Tomas Friend** at telephone number **(703) 308-4548**. The examiner's normal schedule is four, ten-hour days per week including Saturdays.

Art Unit: 1639

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Wang can be reached on (703) 306-3217. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-2742.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist at (703) 308-1235.

Tomas Friend, Ph.D.
14 December 2002



ANDREW WANG
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600